Aviation Investigation Final Report

Location:	Venice, Florida	**Accident Number:**	MIA05FA085
Date & Time:	March 30, 2005, 21:35 Local	**Registration:**	N60204
Aircraft:	Commander 114-B	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane crashed in the Gulf of Mexico, southwest of the departure end of runway 22, at the Venice Municipal Airport, Venice, Florida, in night visual meteorological conditions. During initial climb as the airplane took off and flew over the water, several witnesses were in the vicinity of a pier near a restaurant. The witnesses said they could hear the engine operating overhead, and that the airplane banked, and descended rapidly impacting the water with the engine operating. One of the witness on the pier at the restaurant stated that when the airplane was taking off from the departure end of runway 22, the sound of the engine drew his attention. He said that the engine was "sputtering, popping, and missing," and momentarily went to full power just prior to the airplane impacting the water. Sections of the airplane were later recovered, to include a section from the baggage compartment aft to the tail, the left and right horizontal stabilizer, the rudder, the right spar, the fuselage cabin belly along with the instrument panel, engine and propeller, and the right wing bladder. All sections of the airplane had incurred damage consistent with the impact and with salvage efforts, and when examined, no evidence of preaccident anomalies were noted. The pilot possessed an FAA private pilot certificate, with an airplane single-engine land rating, and according to his logbooks he had accumulated about 258.1 hours total time, 122.9 hours as pilot-in-command, 50.1 hours of simulated instrument total time, and 5.7 hours of night flight experience. A flight instructor with whom the pilot had recently trained revealed that the pilot had accumulated an additional 34.4 hours instrument flight training not recorded in his logbook. FAA records did not show that the pilot possessed an instrument rating.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's in-flight loss of control during takeoff/initial climb over the water at night due to spatial disorientation. A related factor was the night conditions.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (F) LIGHT CONDITION - NIGHT
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (C) SPATIAL DISORIENTATION - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. TERRAIN CONDITION - WATER

Factual Information

HISTORY OF FLIGHT

On March 30, 2005, about 2135 eastern standard time, a Commander 114B, N60204, registered to and operated by a private individual as a Title 14 CFR Part 91 personal flight, crashed into the Gulf of Mexico while departing from the Venice Municipal Airport, Venice, Florida. Night visual meteorological conditions prevailed, and no flight plan was filed. The private-rated pilot and one passenger received fatal injuries, and the airplane was destroyed. The flight was originating at the time of the accident.

A passenger, who was on the flight immediately preceding the accident flight, said that he had flown with the pilot and his wife from Ann Arbor, Michigan, and the flight had stopped in Nashville, Tennessee. After refueling in Nashville, the passenger said the flight then proceeded to Venice, Florida, where he disembarked with the intention to visit relatives. He said he watched while the pilot refueled the airplane, performed a preflight, and then said goodbye. He then departed as the airplane was taxied to runway 22 for takeoff. He said he did not observe the departure, and later learned that the airplane had crashed.

Witnesses located at a pier near the departure end of the runway said they could hear the engine operating overhead, and that the airplane banked, and descended rapidly impacting the water with the engine operating. One of the witnesses who was on the pier at a restaurant near the Venice airport stated that when the airplane was taking off, the sound of the engine drew his attention. He said that the engine was "sputtering, popping, and missing," and momentarily went to full power just prior to the airplane impacting the water. He said the airplane impacted the water about one mile southwest of the pier.

PERSONAL INFORMATION

Records obtained from the FAA showed that the pilot held a private pilot certificate issued on December 3, 2003. He also held an FAA third class medical certificate issued on December 13, 2004, with the stated limitation that he must wear corrective lenses.

The pilot's logbook revealed entries from his first flight on November 27, 2002, to the last entry made on March 26, 2005. According to the logbook, he had accumulated about 258.1 hours total time, 122.9 hours of which was as pilot-in-command, 50.1 hours of simulated instrument total time, and 5.7 hours total for night flight, all in single engine land airplanes.

A flight instructor with whom the pilot had flown, stated that accident pilot had accumulated an additional 34.4 hours of instrument flight training. Records indicate that the pilot did not possess an instrument rating.

AIRCRAFT INFORMATION

N60204 was a 1993 Commander 114-B, serial number 14602. It was equipped with a Textron Lycoming IO-540-T4B5 engine rated at 260 horsepower, and a McCauley B3D32C419-C/G-82NHA-5, three-bladed constant speed propeller.

A review of the airplane maintenance records revealed that the airplane had last been given a 100-hour inspection on March 24, 2005. At that time of the inspection the airplane had accumulated a total of 1076.5 hours.
The static system, altimeter, and transponder had last been tested on March 10, 2005.

METEOROLOGICAL INFORMATION

The Venice Municipal Airport, Venice, Florida, 2141, surface weather observation, was clear skies, visibility was 10 statute miles, and the wind was calm. The temperature was 17 degrees Celsius, the dew point temperature was 10 degrees Celsius, and the altimeter setting was 30.01 inHg.

WRECKAGE AND IMPACT INFORMATION

N60204 crashed in the Gulf of Mexico, southwest of the departure end of runway 22 at the Venice Municipal Airport, Venice, Florida. According to salvage personnel, the accident site was located in geographic position 27 degrees 03.660 minutes North latitude, and 082 degrees 27.785 minutes West longitude, in about 24 feet of water.

The fuselage had incurred damage consistent with the impact, as well as damage consistent with recovery from the ocean. There was no evidence of any in-flight fire having occurred. Portions of the airplane that was recovered include a section from the baggage compartment aft to the tail, the left and right horizontal stabilizer, the rudder, the right spar, the fuselage cabin belly along with the instrument panel, engine, and the right wing bladder. The propeller had remained attached to the engine, firewall and instrument panel. All other sections of the airplane, including the left wing, were not recovered. Flight control continuity was not verified due to the impact and salvage related damage, and also due to missing sections of the airplane that were not recovered.

Examination of the cockpit showed that the mixture, throttle, and propeller controls were full forward. The fuel selector was found between the "left" and "both" positions. The magneto switch was on the "both" position. Battery, alternator, pitot heat, and navigation switches were in the "on" position. The airspeed indicator read approximately 180 knots. The altimeter read approximately 1,000 feet at a barometric pressure set at 30.00 inHg. The vertical speed indicator read approximately 1,200 feet per minute. The oil pressure gauge indicated 50 psi, the oil temperature gauge read 250 degrees Fahrenheit, and the fuel pressure gauge indicated about 45 psi.

All three propeller blades exhibited aft bending and twisting signatures with one blade displaying more leading edge damage, twisting, and "S" bending than the other propeller blades. All three blade faces exhibited chordwise scratches and scoring.

Examination of the engine revealed no preaccident anomalies. There was continuity of the crankshaft, camshaft, and valve train, with continuity being achieved through to the accessory case. Suction and compression was noted at each cylinder when the engine was rotated. There was impact related damage displayed on the No. 1 and No. 5 exhaust pushrod assemblies, and the No. 2 intake pushrod assembly. A bore scope inspection of the interior of the cylinders revealed no anomalies.

Both magnetos were intact, but when tested produced no sparks, and when examined they exhibited damage consistent with saltwater immersion. The ignition harness had corroded and had incurred damage consistent with the impact, which precluded bench testing. The spark plugs, except for No. 6 spark plug displayed normal wear. No. 6 spark plug, had a dark discoloration. Nos. 1 and 2 bottom spark plugs were broken consistent with the impact, and the No. 2 bottom spark plug center electrode was missing.

A liquid was present in the fuel system from the electric fuel pump to the flow divider, mechanical fuel pump, and the fuel servo, which was consistent with aviation fuel. The engine driven fuel pump exhibited corrosion damage consistent with immersion in salt water. The fuel servo had separated from the engine, and the fracture was consistent with the impact. The fuel inlet screen was free of contaminants. The fuel servo regulator section and diaphragms were found intact. The No. 2 fuel injector nozzle was impact fractured. No evidence of preimpact failure or malfunction was noted to any components of the fuel system.

The oil suction screen was contaminated with salt and silt, and no metal was present. In addition, the oil filter was free of metallic debris and obstructions, and the oil cooler assembly had incurred impact damage.

Airborne Division, Elyria, Ohio, conduced detailed examinations of the two vacuum pumps and a vacuum manifold check valve that were installed in the accident airplane and no preaccident anomalies were noted. The examination of the first vacuum pump revealed that the exterior of the unit contained a series of contact marks due to impact damage. The pumps inlet screen contained debris associated with the impact. The pump's drive coupling assembly was intact and attached to the unit. The interior of the vacuum pump contained debris consisting of both a white powder-like material, and a light color sandy material, both consistent with postcrash contamination. The pump's rotor was broken in three pieces, and the fractures were consistent with damage due to impact. All six vanes were intact and in good condition with no obvious damage. The flex center coupling was intact and had not sheared.

The second vacuum pump revealed debris in the inlet screen, consistent with post crash contamination. The pump's drive coupling assembly was intact and attached to the unit. The

internal examination of the vacuum pump revealed debris of a white powder material consistent with postcrash contamination. The pump's rotor was broken into four main pieces as a result of impact damage. All six vanes were intact and in good condition with no obvious damage. The pump's bore was in good condition and displayed no evidence of abrasive wear. The shaft assembly was rusty and contained debris. The flex center coupling was intact and not sheared.

The check-valve manifold displayed no evidence of preimpact failure or malfunction. The exterior of the unit's mounting bracket was bent, and one of the source indicator tubes was bent. The performance test and pressure drop of the check valve manifold was found to be within limits during the test. The interior of the unit had light colored sandy debris throughout.

Examinations of the attitude indicator, turn and bank indicator, horizontal situation indicator, and altimeter were performed at Barfield Instruments Incorporated, Miami, Florida, under NTSB oversight, and no evidence of preimpact failures or malfunctions were noted. The interior of the attitude indicator and altimeter showed signs of corrosion consistent with saltwater contamination, and the altimeter needle, as well as the interior of the turn and bank indicator and horizontal situation indicator revealed damage consistent with the impact.

MEDICAL AND PATHOLOGICAL INFORMATION

A pathologist with the District 12 Medical Examiner's Office performed postmortem examinations of the pilot and passenger. The cause of death for both were attributed to blunt force trauma. No findings that could be considered causal were reported.

The District 12 Medical Examiner's Office conducted toxicological studies for volatiles and drugs. Ethanol 42 mg/dL (0.04 g/dL) was found to be in blood, and 23 mg/dL (0.02 g/dL) was found in urine. The comprehensive drug screen revealed the presence of chlorpheniramine, doxylamine, ephedrine/pseudoephedrine and phenylpropanolamine in urine.

The FAA Toxicology Laboratory, Oklahoma City, Oklahoma, performed toxicological studies on specimens obtained from the pilot. Tests were conducted to detect the presence of carbon monoxide, cyanide, volatiles, and drugs, and were found to be negative for carbon monoxide and cyanide. Ethanol (32 mg/dL mg/hg in blood, 25 m/dL, mg/hg in muscle, and 24 mg/dL, mg/hg in heart) was detected.

The results of toxicological studies of specimens obtained from the passenger did not reveal the presence of carbon monoxide, cyanide, or volatiles. Oxycodone (550 ng/mL), and pseudophedrine (1.6 mg/L) were both detected in blood.

ADDITIONAL INFORMATION

On April 7, 2005, the NTSB released the wreckage of N60204 to Mr. Harry Brooks, Insurance Adjuster. The NTSB retained the vacuum pumps, vacuum manifold, airspeed, vertical speed,

horizontal situation, and attitude indicators, as well as the altimeter for further examination. On July 7, 2006, the NTSB returned all components that had been retained to Mr. Brooks.

Pilot Information

Certificate:	Private	**Age:**	53,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	December 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	258 hours (Total, all aircraft), 17 hours (Total, this make and model), 123 hours (Pilot In Command, all aircraft), 25 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Commander	**Registration:**	N60204
Model/Series:	114-B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	14602
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	March 1, 2005 Annual	**Certified Max Gross Wt.:**	3260 lbs
Time Since Last Inspection:	0 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1077 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	IO-540-T4B5
Registered Owner:	On file	**Rated Power:**	300 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	VNC,18 ft msl	**Distance from Accident Site:**	
Observation Time:	21:41 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	270°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.01 inches Hg	**Temperature/Dew Point:**	17°C / 10°C
Precipitation and Obscuration:			
Departure Point:	Venice, FL (VNC)	**Type of Flight Plan Filed:**	None
Destination:	Sarasota, FL (SRQ)	**Type of Clearance:**	VFR flight following
Departure Time:	21:35 Local	**Type of Airspace:**	

Airport Information

Airport:	Venice Municipal VNC	**Runway Surface Type:**	Asphalt
Airport Elevation:	18 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	22	**IFR Approach:**	None
Runway Length/Width:	5000 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	27.061944,-82.463333

Administrative Information

Investigator In Charge (IIC):	Lovell, John
Additional Participating Persons:	Frank Shaeffer; FAA FSDO; Tampa, FL Mike Childers; Textron Lycoming Engines; Williamsport, PA
Original Publish Date:	November 29, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=61229